WHAT IS CLAIMED IS:

1. A capture capillary for separation of biological particles from a complex mixture, the capillary comprising:

a capture system on the luminal surface having the formula

$$\mathbf{S\text{-}Q\text{-}(X)_n\text{-}CL\text{-}(Y)_m\text{-}L}$$

wherein S is said luminal surface of the capillary tubing; Q is a chemical linkage between the surface and X; X is an affinity reagent; n is 1 or 0; CL is a cleavable linkage; Y is a linker or affinity reagent; m is 1 or 0; and L is a ligand capable of specifically binding a moiety present on a desired particle subset.

2. The capture capillary of Claim 1, wherein n is 1; and X is an affinity reagent comprising cognate binding pair members **X'** and **X''**.

3. The capture capillary of Claim 1, wherein said capillary is divided linearly into multiple zones, wherein each of said zones comprises a unique L ligand.

4. The capture capillary of Claim 1, wherein said cleavable ligand CL comprises an oligonucleotide.

5. The capture capillary of Claim 4, wherein said oligonucleotide is double stranded DNA comprising one or more recognition sequences for a restriction enzyme.

6. The capture capillary of Claim 4, wherein said olignucleotide is a double stranded RNA:DNA hybrid.

7. The capture capillary of Claim 1, wherein said ligand L recognizes a cell surface antigen.

8. The capture capillary of Claim 7, wherein said ligand L is an antibody.

9. The capture capillary of Claim 1, wherein (we should include some claims for density of capture systems).

10. A capture device, comprising:

an array of from 10 to 10^5 capture capillaries the capillary comprising:

a capture system on the luminal surface having the formula

$$\mathbf{S\text{-}Q\text{-}(X)_n\text{-}CL\text{-}(Y)_m\text{-}L}$$

wherein S is said luminal surface of the capillary tubing; Q is a chemical linkage between the surface and X; X is an affinity reagent; n is 1 or 0; CL is a cleavable linkage; Y is a linker or affinity reagent; m is 1 or 0; and L is a ligand capable of specifically binding a moiety present on a desired particle subset.

11. The capture device of Claim 10, wherein n is 1; and X is an affinity reagent comprising cognate binding pair members **X'** and **X''**.

12. The capture device of Claim 10, wherein said capillary is divided linearly into multiple zones, wherein each of said zones comprises a unique L ligand.

13. The capture device of Claim 10, wherein said cleavable ligand CL comprises an oligonucleotide.

14. The capture device of Claim 10, wherein said ligand L recognizes a cell surface antigen.

15. The capture device of Claim 14, wherein said ligand L is an antibody.

16. The capture device of Claim 10, wherein said device further comprises an inlet and an outlet feeding mechanism.

17. The capture device of Claim 16, wherein said device further comprises a collection vessel.

18. The device of Claim 10, wherein said array of capillaries is wrapped in a helical configuration.

19. A capture instrument, comprising a capture device according to Claim 10, and a fluid control system.

20. This set of claims can be elaborated once you decide what might be included in the complete instrument. We can also include specific chemistries for the capture system if there are preferred embodiments.

21. A method for the separation of biological particles, the method comprising:

contacting said particles with a capture capillary, the capillary comprising:

a capture system on the luminal surface having the formula

$$S\text{-}Q\text{-}(X)_n\text{-}CL\text{-}(Y)_m\text{-}L$$

wherein S is said luminal surface of the capillary tubing; Q is a chemical linkage between the surface and X; X is an affinity reagent; n is 1 or 0; CL is a cleavable linkage; Y is a linker or affinity reagent; m is 1 or 0; and L is a ligand capable of specifically binding a moiety present on a desired particle subset;

binding said desired particle subset to said ligand L;

releasing said desired particle subset by contacting with a cleavage reagent specific for said cleavable linker CL;

collecting said desired subset from said capture capillary.

22. The method according to Claim 21, wherein said particles are cells.

23. The method according to Claim 21, wherein said capture capillary further comprises a zone comprising a negative selection capture system to which said desired particle subset does not bind.

24. The method according to Claim 21, wherein said cleavable ligand CL comprises an oligonucleotide and said cleavage reagent comprises a nuclease.

25. The method according to Claim 21, wherein said ligand L recognizes a cell surface antigen.

26. The method according to Claim 21, wherein said ligand L is an antibody.

27. A method for the separation of biological particles, the method comprising:

contacting said particles with a selectivity cassette of the formula

$$\mathbf{X'\text{-}CL\text{-}(Y)_m\text{-}L}$$

applied said particles to a capture capillary, the capillary comprising:

a capture system on the luminal surface having the formula

S-Q-X"

wherein X' and X" are cognate members of a specific binding pair; S is said luminal surface of the capillary tubing; Q is a chemical linkage between the surface and X; CL is a cleavable linkage; Y is a linker or affinity reagent; m is 1 or 0; and L is a ligand capable of specifically binding a moiety present on a desired particle subset;

binding said desired particle subset to said ligand L;

releasing said desired particle subset by contacting with a cleavage reagent specific for said cleavable linker CL;

collecting said desired subset from said capture capillary.